

WHAT IS CLAIMED IS:

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1. A method of forming a polygon image, comprising the steps  
of:

5 obtaining a plurality of polygons having normal line data  
as apex data and constituting a model;

10 sorting the model constituted by the plurality of  
polygons into polygons of a first color part and polygons of  
a second color part by boundary lines consisting of the  
direction of a light source and normal lines of the model;

15 pasting up a first mono-color texture on the sorted  
polygons having the first color part, and pasting up a second  
mono-color texture on the sorted polygons having the second  
color part; and

20 dividing the polygons intersecting the boundary lines  
along the boundary lines, pasting up the first mono-color  
texture on the polygons belonging to the first color part out  
of the divided polygons, and pasting up the second mono-color  
texture on the polygons belonging to the second color part.

2. The method of forming a polygon image according to claim  
1, wherein

25 said sorting by the boundary lines into polygons of the  
first color portion and polygons of the second color part is  
implemented by:

acquiring an inner product value of the normal line of  
the apexes of the respective polygons and the normal line of

the light source, from the direction of the light source and the normal line of the model with respect to the plurality of polygons, and then

5 sorting into polygons having the same polarity of the thus acquired inner product at the respective apexes and polygons having different polarities of the thus acquired inner product at the respective apexes.

3 The method of forming a polygon image according to claim 2, wherein

10 the intersectional position of the polygon intersecting a boundary line is acquired from a proportional relation with the inner product of each of two apexes of a boundary-line-intersecting side of the polygon intersecting the boundary lines when the inner product value at the intersectional position is 0.

15 4. An image processing apparatus comprising:

20 control means for obtaining a plurality of polygons having normal line data as apex data and constituting a model, the control means sorting the model constituted by the plurality of polygons into polygons of a first color part and polygons of a second color part by boundary lines consisting of the direction of a light source and normal lines of the model;

25 a rendering processor for pasting up a first mono-color texture on the thus sorted polygons having the first color part, and pasting up a second mono-color texture on the thus sorted

polygons having the second color part, and

dividing the polygon intersecting the boundary lines  
along the boundary lines, pasting up the first mono-color  
texture on the polygon belonging to the first color part out  
of the thus divided polygons, and pasting up the second  
mono-color texture on the polygon belonging to the second color  
part.

5. The image processing apparatus according to claim 4,  
wherein

said sorting by the boundary lines into polygons of the  
first color portion and polygons of the second color part in  
the control means is implemented by:

acquiring the inner product value of the normal lines of  
the apexes of the respective polygons and the normal line of  
the light source, and then sorting into polygons having the same  
polarity of the thus acquired inner product at the respective  
apexes and polygons having different polarities of the acquired  
inner product at the respective apexes.

6. The image processing apparatus according to claim 5,  
wherein

the intersectional position of a side of the  
boundary-line-intersecting polygon and the boundary line is  
acquired from a proportional relation with the inner product  
of each of two apexes of the boundary-line-intersecting side  
of the polygon intersecting the boundary lines when the inner

product value at the intersectional position is 0.

7. A record medium storing a program which is execution controlled by control means in an image processing apparatus, the program providing a control which comprises the steps of:

obtaining a plurality of polygons having normal line data as apex data and constituting a model,;

sorting the model constituted by the plurality of polygons into polygons of a first color part and polygons of a second color part by boundary lines consisting of the direction of a light source and normal lines of the model;

pasting up a first mono-color texture on the sorted polygons having the first color part, and pasting up a second mono-color texture on the sorted polygons having the second color part; and

dividing the polygons intersecting the boundary lines along the boundary lines, pasting up the first mono-color texture on the polygons belonging to the first color part out of the divided polygons, and pasting up the second mono-color texture on the polygons belonging to the second color part.

8. The record medium having stored therein the program according to claim 7, wherein

said sorting by the boundary lines into polygons of the first color portion and polygons of the second color part is implemented by:

acquiring an inner product value of the normal line of

the apexes of the respective polygons and the normal line of the light source, from the direction of the light source and the normal line of the model with respect to the plurality of polygons, and then

- 5            sorting into polygons having the same polarity of the thus acquired inner product at the respective apexes and polygons having different polarities of the thus acquired inner product at the respective apexes.

- 10           9.    The record medium having stored therein the program according to claim 8, wherein

the intersectional position of the polygon intersecting a boundary line is acquired from a proportional relation with the inner product of each of two apexes of a boundary-line-  
15    intersecting side of the polygon intersecting the boundary lines when the inner product value at the intersectional position is 0.